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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,703	09/30/2003	David L. O'Meara	FKL-002	4557

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WOOD, HERRON & EVANS, LLP (TOKYO ELECTRON)
2700 CAREW TOWER
441 VINE STREET
CINCINNATI, OH 45202

EXAMINER	
GEORGE, PATRICIA ANN	

ART UNIT	PAPER NUMBER
1765	

DATE MAILED: 08/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/674,703	O'MEARA ET AL.	
	Examiner	Art Unit	
	Patricia A. George	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *33-44* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on *30 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/29&31/03*.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-32, are drawn to method, classified in class 438, subclass 689.

III. Claims 33-44, are drawn to apparatus, classified in class 156, subclass 345.11.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice another and materially different process such as etching a substrate.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Kristi L. Davidson on July 22, 2005 a provisional election was made with traverse to prosecute the invention of group I, claims 1-32. Affirmation of this election must be made by applicant in replying to this Office action. Claims 33-44 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5, 12, 20 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Ludviksson et al. in US Patent No. 6,894,769.

Ludviksson disclosed a method of monitoring status of a system component (col. 1, l. 67) in a processing system (col. 2., l.27-28), the method comprising: exposing a system component to a reactant gas (col. 1, l. 25-28) during a process (col. 1-2, l. 67-1), wherein the reactant gas (col. 1, l.25) is capable of etching (l. 29) the system component material (l. 29) to form an erosion product (l. 38 reads on erode which is a result of erosion product); monitoring the processing system for release of the erosion

product (l. 67) during the process (col. 1-2, l. 67-68) to determine status of the system component (col.10. l. 49); and based upon the status from the monitoring (l. 63), performing one of the following: (a) continuing the exposing and monitoring (l. 64); and (b) stopping the process (l. 64).

As for claim 2, Ludviksson discloses the exposing (col. 1, l. 34-35) comprises the system component (fig. 1) being at least one of a process tube, a shield (14), a ring (60), a baffle (64), a wall (col. 9, l. 30), a protective coating (col. 10, l. 12), an injector, a substrate holder (30), a liner (claim 28), a pedestal, a cap cover (fig. 2B, 27b), an electrode (24), and a heater (col. 4, l. 49).

As for claim 3, Ludviksson discloses the exposing comprises the system component containing at least one of an oxide, a nitride, and a carbide (col. 1, l. 46).

As for claim 4, Ludvikson discloses the exposing comprises the system component containing at least one of quartz (col. 5, l. 54), Al.sub.2O.sub.3 (col. 5, l. 54), SiN, and SiC (col. 5, l. 54).

As for claim 5, Ludviksson admits prior art wherein exposing comprises the system component having a material deposit thereon, and wherein the process is a cleaning process for removing the material deposit from the system component. (Col.1, l. 59).

As for claim 12, the exposing comprises the reactant gas containing a halogen-containing gas (col.5, line 67) is written on fluor which is a halogen-containing gas) for etching a substrate during a substrate etching process (col. 1, l. 29-31).

As for claim 20, the monitoring comprises using an optical monitoring system (col. 2, l. 2) to detect light absorption (col. 2, line 3 elaborated on in col. 6, l. 12-14) of the erosion product (col. 2, l. 7-8).

As for claim 21, the monitoring further comprises determining if the intensity level of the light absorption has reached a threshold value (col. 6, l. 6-7).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
>
> This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-9, 12, 14-17, 20-22, and 26-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burnham et al. (USPN 5,947,053) in view of Tsai et al. (USPN 6,592,817).

Burnham discloses a method of monitoring erosion of a system component in a plasma processing system (column 1, lines 5-10) comprising exposing a system component to a reactant gas (column 4, lines 11-31 is written on exposing to plasma),

wherein the reactant gas is capable of etching the system component material to form an erosion product (column 4, lines 11-31), during the process to determine status of the system component (column 6, lines 47-67).

Burnham fails to disclose monitoring the processing system for release of an erosion product and determining, based upon the status from the monitoring, performing one of the following: (a) continuing the exposing and monitoring; and (b) stopping the process.

Tsai teaches an effluent monitoring apparatus (col. 1, l. 2-3) which is written on the claim limitation "monitoring the processing system for release of an the erosion product". Tsai also teaches determination, based upon the status from the monitoring (col. 16, l. 29-30), performing one of the following: (a) continuing the exposing and monitoring (col. 16, l. 20); and (b) stopping the process (col. 16, l. 30).

It would have been obvious to one ordinary skill in the art at the time of invention was made, to modify Burnham's method of monitoring erosion of a system component in a plasma processing system by combining Tsai's effluent monitoring apparatus to monitoring the processing system for release of an the erosion product because Tsai teaches it is desirable to stop processing after a predetermined period or to determine a process endpoint, such as an endpoint of a chamber cleaning process. Tsai also teaches it is desirable to clean chamber walls and surfaces without erosion of chamber surfaces (col.1, l.55-58).

As for claim 2, Tsai teaches wherein the exposing comprises the system component being at least one of a process tube, a shield, a ring (fig. 2c, P. 66, 68, 70), a baffle, a wall (col. 1, line 67), a protective coating (col. 8, l. 61-61), an injector, a wafer support platter (written on substrate holder, col. 12, l.10), a liner, a pedestal (co. 16, l. 39), a cap cover, an electrode (col. 2, l. 31), and a heater (col. 11, l. 8).

As for claim 3, Tsai teaches the system component containing at least one of an oxide (col. 3, l. 26), a nitride (l. 27), and a carbide.

As for claim 4, Tsai teaches the system component containing at least one of quartz (col. 5, l. 57), Al.sub.2O.sub.3 (l. 45), SiN, and SiC.

As for claim 5, Tsai teaches the system component having a material deposit thereon (col. 6, l. 5-6), and wherein the process is a cleaning process for removing the material deposit from the system component (l. 17).

As for claim 6, Tsai teaches the system component having a material deposit thereon containing at least one of Si (col. 16, l. 55-56), SiGe, SiN, SiO.sub.2 (l. 56), doped Si, HfO.sub.2, HfSiO.sub.x, ZrO.sub.2, and ZrSiO.sub.x, and wherein the process is a cleaning process for removing the material deposit from the system component (l. 54-56. is written on "the film to be cleaned" which is the same as removing the deposited film.)

As for claim 7, Tsai teaches the process comprises at least one of a chamber cleaning process (col. 2, l. 19-21), a chamber conditioning process (col. 10, l. 30-31), a substrate etching process (col. 6, l. 9-10), and a substrate film formation process (col. 11, l. 19).

As for claims 8, and 9, Tsai teaches the reactant gas fluorine (col. 6, l.8-20), which is written on the limitation a halogen-containing gas. Tsai also teaches HF (col. 6, l. 20-21) for cleaning the system component (col. 6, l. 21) during a chamber cleaning process (col.6, l.51) and the monitoring release of SiBr.sub.4 (col. 6, l. 15-17).

As for claim 12, Tsai teaches the reactant gas containing excited halogen species in the energized gas (see claim 8 which is written on the reactive gas containing halogen), used when etching a substrate during a substrate etching process (reference col. 1, l. 7-8). Tsai also teaches the relativity of the invention to a process chamber, and elaborates etching a substrate (l. 19-24).

As for claim 14, Tsai teaches the reactant gas containing at least one of a silicon-containing gas (col. 10, l. 63) and a nitrogen-containing gas for depositing a film (l. 3) during a substrate film formation process (col. 12, l. 3).

As for claim 15, Tsai teaches the reactant gas containing tetraethyl orthosilicate (TEOS) (col. 15, l. 7-15) for depositing a film during a substrate film formation process.

As for claim 16, Tsai teaches during a thermal deposition process, a hot liquid is circulated through the chamber walls to maintain the chamber at elevated temperatures (col. 11, l. 46-49).

As for claim 17, Tsai teaches operating the processing system at a chamber pressure of 20 Torr, which is encompassed by the claimed range of between 10 mTorr and about 760 Torr during the exposing (col. 7, l. 33).

As for claim 20, Tsai teaches the monitoring comprises using an optical monitoring system to detect light absorption of the erosion product (col. 5, l. 61-63).

As for claim 21, Tsai teaches the monitoring further comprises determining if the intensity level of the light absorption (col. 9, l. 54-58) has reached a threshold value (col. 9, l. 55-56 describes the transistor may be tailored which is written on the limitations of a desired threshold value).

As for claim 22, Tsai teaches performing (b) stopping the process (col. 1, l. 55) occurs after determining an endpoint (col. 1, l. 56), which is written on the limitation "that the threshold value has been reached".

As for claim 26, Tsai teaches the monitoring comprises monitoring release of at least one of a silicon-containing erosion product (col. 3, l. 37) and a nitrogen-containing erosion product (col. 3, l.37-38).

As for claim 27, 28, 29, and 30, Tsai teaches all the elements of monitoring the release of halide species erosion products, such as silicon halide and silicon oxyhalide of claims 29 and 30. The limitation of claim 28 has been discussed above. Tsai teaches the deposition of silicon and silicon oxide (col. 3, l. 37 and 41) in the process chamber (col. 3, l. 32), the presence of halide ion (claim 8) which are contributed by etchants which are free fluorine radicals, NF.sub.3 (col. 3, l. 50), then by conversion of gas to dissociated species (col. 3, l. 47-49), are monitored (claim 43) as a halide species erosion product. Because the chemistry of a halide species erosion products are present and monitored, halide species erosion products such as silicon halide and silicon oxyhalide exist.

Tsai is silent as to the exact temperature of the chamber being between 100 degrees C. and 1000 degrees C. as in claim 16.

Claim Rejections - 35 USC § 103

Claims 10, 11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burnham et al. (USPN 6,947,053) and Tsai et al. (USPN 6,592,817) as applied to claims 1-9, 12, 14-18, and 26-30 above and further in view of Chow et al. (USPN 6,872,322).

See discussion on the teachings of Burnham and Tsai above.

The combined teachings of Burnham and Tsai failed to teach the use of the reactant gas containing silicon or nitrogen, and the reactant gas containing NH.sub.3, for chamber conditioning as referenced in claim 10. They were also silent to the use of HF as an etchant as in claim 13.

Chow teaches use of the reactant gas containing silicon (col. 13, l. 55-60), or NH.sub.3 (col. 9, l. 11, and 26-30), used for conditioning the chamber (col. 12. L. 13-17), and use of HF (col. 8, l. 51) for etching a substrate (col. 8, l. 49) during a substrate etching process.

As for claim 10, Chow teaches the exposing comprises the reactant gas containing at least one of a silicon-containing gas (col. 13, l. 55-60) for conditioning the system component during a chamber conditioning process (col. 12. L. 13-17).

As for claim 11, Chow teaches the exposing comprises the reactant gas containing at least one of dichlorosilane and NH.sub.3 (col. 9, l. 11, and 26-30) for conditioning the system component during a chamber conditioning process.

As for claim 13, Chow teaches the exposing comprises the reactant gas containing HF (col. 8, l. 51) for etching a substrate (col. 8, l. 49) during a substrate etching process.

It would have been obvious to one ordinary skill in the art at the time of invention was made, to modify the inventions of Burnham and Tsai to use dichlorosilane or a nitrogen containing gas for conditioning the system because Chow teaches the cleaning process also conditions the chamber it creates the byproduct of a passivation layer.

Claim Rejections - 35 USC § 103

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Burnham et al. (USPN 6,947,053) and Tsai et al. (USPN 6,592,817) as applied to claims 1-9, 12, 14-18, and 26-30 above and further in view of Kim et al. (USPN 6,436,303).

See discussion on the teachings of Burnham and Tsai above.

The combined teachings of Burnham and Tsai teach the use of quartz system components (see discussion of claim 2), but fail to disclose the chamber operating at 200 mTorr to about 760 Torr, at the temperature of 200 to 800.degree. C. as defined by claim 18.

The teachings of Kim disclose the chamber operating at 200 mTorr to about 760 Torr (col. 7, l. 38), at the temperature of 200 to 800.degree C. (l. 39-40). as defined by claim 18.

It would have been obvious to one ordinary skill in the art at the time of invention was made to use the monitoring system of Burnham and Tsai for any process that could be performed in any capable system as the inventor of instant invention points out that the length of the cleaning process may shorten, which allows system components to last longer as they are not subject to undesired erosion or premature disposal.

Claim Rejections - 35 USC § 103

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Burnham et al. (USPN 6,947,053) and Tsai et al. (USPN 6,592,817) as applied above, and in further view of Suzuki et al. (USPN 6,677,549).

See discussion on the teachings of Burnham and Tsai above.

The combined teachings of Burnham and Tsai fail to teach the system component containing quartz having a SiN protective coating and a metal oxide material deposit thereon, and also do not teach the process is a cleaning process for removing deposit material from the protective coating, as defined in claim 19.

Suzuki teaches it is know in the industry that plasma processing apparatus made of quartz glass is vulnerable to gas with fluorine (col. 4, l. 15-16), thus the quartz (base material) is coated with a dielectric (col. 4, l. 30) material. In the 4th embodiment (col. 11, l. 30) Suzuki goes on to teach silicon nitride (col. 11, l. 56) formed on the surface of

the base material (col. 11, l. 59, written on quartz) is an optical absorption layer (col. 11, l.55) that serves as a protective layer (col. 11, l. 60). Suzuki goes on to teach applied (col. 11, l. 52 is written on deposited) metal oxides (col. 12, l. 56) are possible types of glass (col. 12, l. 53) to used for the dielectric material (col. 12, l. 50). Suzuki also teaches it is known in the industry that it is possible to perform cleaning for removing an undesired substance adhering to the processed face (col. 1, l. 59-61) and his processing methods can be applied to surface treatment (col. 14. l. 54). Suzuki continues to teach his method is also applicable as a cleaning method (written on cleaning process) that can be used for the removal of oxide or organic substances, heavy metal, etc. (l. 58-60 written on material deposit) on a surface written on protective coating).

It would have been obvious to one ordinary skill in the art at the time of invention was made, to utilize the combined monitoring process of Burnham and Tsai, to utilize processing of an etching chamber to remove unwanted materials from system components because it would allow for longer part lives as illustrated by the teachings of Suzuki.

Claim Rejections - 35 USC § 103

Claims 23, 24, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burnham et al. (USPN 6,947,053) and Tsai et al. (USPN 6,592,817) as applied to claims 1-9, 12, 14-18, and 26-30 above and future in view of Nakata et al. (USPN 5,989,928).

See discussion on the teachings of Burnham and Tsai above.

The combined teachings of Burnham and Tsai do not teach the use of a gas mass sensor.

Nakata teaches the wide use of spectral analysis (col. 6, l.2) measuring from a specified species (col. 5, l. 32, written on "selected"). Nakata also teaches that mass spectrometry (col. 1, l. 37-42) is taught in prior art which includes detecting radicals(col. 1, l. 38) or ions (col. 1, l. 39) such as an etching gas (col. 1, l. 39) or a decomposition (col.1, l. 39) product or reaction product of emissions (col. 1, l. 40).

It would have been obvious to one ordinary skill in the art at the time of invention was made, to modify the teachings Burnham and Tsai to include the use of mass spectrometry as Nakata teaches it is widely used in order to detect endpoint (ab.).

As for claim 23, Nakata teaches prior art uses the monitoring comprises using a mass sensor to detect a mass signal from the erosion product (col. 1, l. 37-42).

As for claim 24, Nakata teaches the monitoring further comprises determining if an intensity level of the spectral analyzer has reached a threshold value (col. 6, l. 27-29), which is written on the limitation "mass signal".

As for claim 25, Nakata teaches performing (b) stopping the process occurs after determining that the threshold value has been reached (col. 6, l. 32-25).

Claim Rejections - 35 USC § 103

Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ludviksson et al. (USPN 6,894,769).

Ludviksson et al. teaches, monitoring erosion of system components by optical emission.

Ludviksson teaches a method of monitoring status of a system component (col. 1, l. 67) in a processing system (col. 2., l.27-28), the method comprising: forming a protective barrier, written on coating, on a system component (col.10, l.16-17); to reduce errosion of system components during plasma processing (col.10, l.13-14) (written on: exposing the protective coating to a reactant gas during a process), wherein the disappearance of the protective coating (written on: reactant gas is capable of etching the protective coating to form an erosion product) is monitored (col. 10, l. 27-31), and the change in emissions is identified to determine the status of the system component (col.10, l.30-31). Ludviksson teaches a processing system for release of the erosion product (col. 2., l. 67) during the process (col. 1-2, l. 67-68) to determine status of the system component (col.10. l. 49); and based upon the status from the monitoring (l. 63), performing one of the following: (a) continuing the exposing and monitoring (l. 64); and (b) stopping the process (l. 64).

As for claim 32, Ludviksson teaches a method according to claim 31, wherein the forming a protective coating comprises at least one of Y.sub.2 O.sub.3, Sc.sub.2 O.sub.3, Sc.sub.2 F.sub.3, YF.sub.3, La.sub.2 O.sub.3, CeO.sub.2, Eu.sub.2 O.sub.3, DyO.sub.3, SiO.sub.2, MgO, Al.sub.2 O.sub.3, ZnO, SnO.sub.2, and In.sub.2 O.sub.3.

It would have been obvious to one of ordinary skill in the art at the time of invention was made, to use the teachings of Ludviksson to monitor adverse processing conditions of consumable parts (col.1, l. 60-63) to save money from the overdue or premature replacement of consumable system components.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art made of record is Stack (USPN 5,146,098), Madzsar (USPN 5,187,542), McGahay (USPN 5,712,702), Oehrlein et al. (USPN 5,798,016), Sun et al. (USPN 6,852,242), Wong et al. (USPN 6,852,242), Otsubo et al. (USPN 6,750,977), and Coronel et al (USPN 6,363,294).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia A. George whose telephone number is (571) 272-5955. The examiner can normally be reached between 7:00am and 4:30pm on any weekday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NADINE G. NORTON
SUPERVISORY PATENT EXAMINER

06/06
PAG